CLAIMS:

1. A connector comprising:

   a) a first set of discrete signal conducting members realized at least in part on a first surface, the signal conducting members in said first set being arranged generally side by side;

   b) a second set of discrete signal conducting members realized at least in part on a second surface, said second set being remote from said first set, the signal conducting members in said second set being arranged generally side by side;

   c) a layout of connection paths for interconnecting said first and second sets of discrete signal conducting members such that signals may be exchanged between signal conducting members of said first and second sets, each signal conducting member of said first set being provided with connection paths to a different pair of non-contiguous signal conducting members of said second set.

2. A connector as defined in claim 1, wherein each signal conducting member of said second set belongs to at most two different pairs of non-contiguous signal conducting members of said second set.

3. A connector as defined in claim 2, wherein each signal conducting member of said first set is provided with a main connection path to a first signal conducting member of said second set and an alternate connection path to a second signal conducting member of said second set, said first and second signal conducting members of said second set being non-contiguous in said second set, said first signal conducting member of said second set being different for each signal conducting member of said first set, said second signal conducting member of said second set being different for each signal conducting member of said first set.

4. A connector as defined in claim 3, wherein the signal conducting members of said second set are arranged according to a certain order, the certain order characterized by a series of positions, each different pair of non-contiguous signal conducting members of said second set occupying a different pair of unsuccessive positions in said certain order.

5. A connector as defined in claim 4, wherein said first set of signal conducting members includes N signal conducting members and said second set of signal conducting member includes N+2 signal conducting members, said certain order being characterized by N+2 positions.

6. A connector as defined in claim 5, wherein when said first signal conducting member of said second set occupies position X in said certain order, said second signal conducting member of said second set occupies position X+2 in said certain order.

7. A connector as defined in claim 5, wherein the signal conducting members of said first set are arranged according to a first order and the signal conducting members of said second set are arranged according to a second order, the layout of the main and alternate connection paths for each signal conducting member of said first set being computed as follows:

For $1 \leq POS \geq N$

{

MPOS = POS

APOS = POS + 2

}

where:

POS is the position in the first order of the signal conducting member of the first set;

MPOS is the position in the second order to which the main connection path is connected;

APOS is the position in the second order to which the alternate connection path is connected.

8. A connector as defined in claim 1, wherein said connector further includes at least one semiconductor body defining said first and second surfaces.

9. A connector as defined in claim 8, wherein said semiconductor body includes multiple layers, said first surface corresponding to a particular layer of said semiconductor body.

10. A connector as defined in claim 9, wherein said second surface corresponds to the same particular layer of said semiconductor body.

11. A connector as defined in claim 1, wherein said signal conducting members are selected from the group consisting of wires, solder bumps, traces and vias.

12. A connector as defined in claim 1, wherein said signals are electric signals.

13. A connector as defined in claim 1, wherein said signals are optical signals.

14. In combination:

a) a connector including:

i) a first set of discrete signal conducting members realized at least in part on a first surface, the signal conducting members in said first set being arranged generally side by side;

ii) a second set of discrete signal conducting members realized at least in part on a second surface, said second set being remote from said first set, the signal conducting members in said second set being arranged generally side by side;

iii) a layout of connection paths for interconnecting said first and second sets of discrete signal conducting members such that

signals may be exchanged between signal conducting members of said first and second sets, each signal conducting member of said first set being provided with connection paths to a different pair of non-contiguous signal conducting members of said second set;

b) a control mechanism operative to select, for each signal conducting member of said first set, one of the associated connection paths for establishing a signal connection between the signal conducting member of said first set and a particular one of the respective pair of non-contiguous signal conducting members of said second set.

15. A combination as defined in claim 14, wherein each signal conducting member of said second set belongs to at most two different pairs of non-contiguous signal conducting members of said second set.

16. A combination as defined in claim 15, wherein each signal conducting member of said first set is provided with a main connection path to a first signal conducting member of said second set and an alternate connection path to a second signal conducting member of said second set, said first and second signal conducting members of said second set being non-contiguous in said second set, said first signal conducting member of said second set being different for each signal conducting member of said first set, said second signal conducting member of said second set being different for each signal conducting member of said first set.

17. A combination as defined in claim 16, wherein said control mechanism is operative to select, for each signal conducting member of said first set, one of said main and alternate connection paths for establishing a signal connection between the signal conducting member of said first set and one of said first and second signal conducting members of said second set.

18. A combination as defined in claim 17, wherein, for each signal conducting member of said first set, said control mechanism is operative to activate one of said main and alternate connection paths and to deactivate the other of said main and alternate connection paths.

19. A combination as defined in claim 17, wherein, for each signal conducting member of said first set, said control mechanism is operative to permanently disconnect one of said main and alternate connection paths.

20. A combination as defined in claim 17, wherein said control mechanism is capable to test the signal conducting members of said second set for faults.

21. A combination as defined in claim 20, wherein said control mechanism includes a control logic circuit.

22. A combination as defined in claim 21, wherein said connector and said control mechanism are realized on a semiconductor body.

23. A combination as defined in claim 22, wherein the semiconductor body is a wafer.

24. A method for fabricating a connector, said method comprising:

a) realizing a first set of discrete signal conducting members at least in part on a first surface, the signal conducting members in said first set being arranged generally side by side;

b) realizing, remote from said first set of signal conducting members, a second set of discrete signal conducting members at least in part on a second surface, the signal conducting members in said second set being arranged generally side by side;

c) computing a layout of connection paths for interconnecting said first and second sets of discrete signal conducting members such that

signals may be exchanged between signal conducting members of said first and second sets, said layout of connection paths providing each signal conducting member of said first set of signal conducting members with connection paths to a different pair of non-contiguous signal conducting members of said second set.

25. A method for fabricating a connector, said method comprising:

a) realizing a first set of discrete signal conducting members at least in part on a first surface, the signal conducting members in said first set being arranged generally side by side;

b) realizing, remote from said first set of signal conducting members, a second set of discrete signal conducting members at least in part on a second surface, the signal conducting members in said second set being arranged generally side by side according to a certain order, the certain order characterized by a series of positions;

c) computing a layout of connection paths for interconnecting said first and second sets of discrete signal conducting members such that signals may be exchanged between signal conducting members of said first and second sets, said layout of connection paths providing each signal conducting member of said first set with a main connection path to a first signal conducting member of said second set and an alternate connection path to a second signal conducting member of said second set, the first and second signal conducting members of said second set occupying unsuccessive positions in said certain order, the first signal conducting member of said second set being different for each signal conducting member of said first set, the second signal conducting member of said second set being different for each signal conducting member of said first set.

26. A method as defined in claim 25, wherein the signal conducting members of said first set are arranged according to a first order and the signal conducting

members of said second set are arranged according to a second order, said layout of connection paths for each signal conducting member of said first set being computed as follows:

For $1 \leq POS \geq N$

{

MPOS = POS

APOS = POS + 2

}

where:

POS is the position in the first order of the signal conducting member of the first set;

MPOS is the position in the second order to which the main connection path is connected;

APOS is the position in the second order to which the alternate connection path is connected.

27. A method for connecting a first set of discrete signal conducting members realized at least in part on a first surface to a second set of discrete signal conducting members realized at least in part on a second surface, the second set of discrete signal conducting members being remote from the first set of signal conducting members, the signal conducting members in the first set being arranged generally side by side according to a first order, the signal conducting members in the second set being arranged generally side by side according to a second order, each of the first and second orders characterized by a series of positions, said method comprising:

a) computing a layout of connection paths for interconnecting the signal conducting members of the first and second sets, said layout of connection paths providing each signal conducting member of the first set with a main connection path to a first signal conducting member of the second set and an alternate connection path to a second signal conducting member of the second set, the first and second signal

conducting members of the second set occupying unsuccessive positions in the second order, the first signal conducting member of said second set being different for each signal conducting member of said first set, the second signal conducting member of said second set being different for each signal conducting member of said first set;

b) for each signal conducting member of the first set, testing each one of the first and second signal conducting members of the second set for a fault;

c) for each signal conducting member of the first set, selecting one of the respective main and alternate connection paths on the basis of the testing at b, for connecting each signal conducting member of the first set to a single signal conducting member of the second set.

28. A method as defined in claim 27, wherein if no failures are detected, the main connection path is selected for each signal conducting member of the first set.

29. A method as defined in claim 28, wherein if, for a particular signal conducting member of the first set, a fault is detected in the first signal conducting member of the second set, said method includes:

a) selecting the main connection path for each of the signal conducting members of the first set preceding the particular signal conducting member in the first order;

b) selecting the alternate connection path for the particular signal conducting member;

c) selecting the alternate connection path for each of the signal conducting members of the first set succeeding the particular signal conducting member in the first order.